

BAKHOV, L.S., inzhener.

Drainage plans for Bashkirian lignite beds. Ugol' 32 no.6:28  
Je '57. (MLRA 10:7)

1. Trest Bashkirugol',  
(Bashkiria--Lignite) (Mine drainage)

L 65295-65 EWT(d)/EWT(1)/TS(v)-3/TSS-2 TT/AST/DW

ACCESSION NR: AP5021255

UR/0293/65/003/DOL/0618/0629  
629.195.2:621.39

AUTHORS: Getmantsev, G. G., Kalashnikov, N. I., Bykov, V. I., Benediktov, Ye. A.,  
Yerukhinov, P. M., Belikov, V. V., Bakhnin, V. M., Kantor, L. Ye., Korobkov,  
Yu. S., Kunilov, M. V., Mitrov, N. A., Pustov, I. M., Rapoport, V. O., Sigalov,  
A. G., Cherepovitskiy, V. A., Akin, E. A.

TITLE: The results of an experiment on radio communications via "Echo 2" and the  
moon at a frequency of 162.4 megacycles between the observatories of Jodrell Bank  
and Zimenki

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 4, 1965, 618-629

TOPIC TAGS: moon, satellite communication, radio telescope, radio transmission,  
satellite tracking, scientific research coordination / Jodrell Bank radio tele-  
scope, Zimenki observatory radio telescope, BESM 2 electronic computer

ABSTRACT: During February-March 1964 the Academy of Sciences of the USSR, NASA  
of the USA, and the General Post Office Department of Great Britain conducted an  
experiment to establish one-way radio communication at 162.4 megacycles via the  
passive satellite "Echo-2" and the moon. Echo-2 was used for 34 communication

Card 1/2

L 65295-65

ACCESSION NR: AP5021255

6

tests of 10-15 minutes (the time interval permitted by Echo's orbit), and the moon was used for 15 test runs between the Echo tests. The transmitting equipment at Jodrell Bank and the receiving unit of the Zimenki Observatory are described in detail. Echo orbit information furnished by NASA, visual observations, and radio tracking data from fixed stations were fed to a BESM-2 electronic calculator which provided programmed tracking control. The received signal exhibited strong fluctuations separable into two periods: 1) a 1-2 minute fluctuation associated with Echo-2 distortion from a sphere and with tracking errors; 2) a 3-10 second period associated with small surface irregularities. The rapid fluctuations varied with each test. Voice signals, slowed by a factor of 8, were barely intelligible. Telegraph, teletype, and photofacsimile transmission, in general, were unsatisfactory, but in periods of high signal-to-noise ratios intelligible messages were received. The moon transmissions were not as clear but did furnish scientific information. Unexpected transmission losses included 3-5 db for polarization losses and 1-2 db for unknown causes. The international cooperation was excellent, with the Soviet submitting a complete report. Offers for further cooperation have been extended. Orig. art. has: 3 tables, 7 figures, and 4 formulas.

ASSOCIATION: none  
SUBMITTED: 18Apr65  
NO REF SOV: 000  
Card 2/276

ENCL: 00  
OTHER: 002

SUB CODE: AA, EO

ACC NR: AP6029984

SOURCE CODE: UR/0413/66/000/015/0194/0194

INVENTOR: Grodko, L. N.; Leykand, M. A; Bakhov, O. P.; Kurova, I. V.

ORG: none

TITLE: Helicopter rotor-blade damper. Class 62, No. 184142

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 194

TOPIC TAGS: vibration damping, helicopter rotor, helicopter, rotary wing aircraft

ABSTRACT: An Author Certificate has been issued for a helicopter-rotor shock absorber, consisting of a hydraulic damping cylinder, a piston, and a rod connected by a bracket to the rotor hub. To increase the damping of the low-frequency rotor-blade vibrations during ground resonance and to decrease the stresses on the rotor blade and hub by vibrations arising during flight, the damper is connected to an auxiliary resilient element (for example, spring or rubber), which is placed on the rod or in the cylinder in series with the main shock-absorbing cylinder.

SUB CODE: 01/ SUBM DATE: 06Jul64/

Card 1/1

UDC: 629.135/138.62-567

34782  
S/200/62/000/001/001/004  
D201/D302

16.5000 (1031, 1132, 1329)

AUTHORS: Bakhovets, B.A., and Lyshchinskiy, G.P.

TITLE: Synthesis of linear systems of an automated electric drive in the control regime

PERIODICAL: Akademiya nauk SSSR. Sibirskoye otdeleniye. Izvestiya, no. 1, 1962, 19 - 29

TEXT: The author postulate that the curve  $x_n(t)$  of the transient process of the system should be close to a curve  $x_m(t)$  which is assumed to satisfy the requirements imposed on the system. Let the chosen structure be characterized by a differential equation with constant coefficients. If  $x_m(t)$  is chosen as a solution of

$$\sum_{k=0}^m c_k x_m^{(k)} = 0 \quad (5)$$

with initial conditions  
Card 1/3

Synthesis of linear systems of an ...

S/200/62/000/001/001/004  
D201/D302

$$x^{(k)}(0) = x_0^{(k)} [k = 0, 1, 2, \dots, (n - 1)] \quad (2)$$

and  $m < n$ , a relation  $a_k = r(c_k)$  becomes fundamental for the problem. The choice of the law governing the control regime is discussed. The synthesis of parameters of a chosen system structure is carried out as follows: In general the system in the control state may be described by an operator equation; it is shown that the latter can always be reduced to

$$\sum_{k=0}^n a_k x_n^{(k)} = 0 \quad (1)$$

with initial conditions (2). Finally, the relationship between coefficients  $a_k$  and  $c_k$  is determined from the condition that the error resulting by substituting function  $x_n(t)$  (3) be minimum. This leads to

Card 2/3

Synthesis of linear systems of an ...

0/200/62/000/001/001/004  
D201/0302

$$\sum_{k=0}^{m-1} c_k \int_0^{\infty} x_n^{(k)} x_n^{(l)} dt = - \int_0^{\infty} x_n^{(m)} x_n^{(l)} dt \quad |l=0, 1, 2, \dots (m-2)|; \quad (19)$$

$$c_0 \sum_{k=1}^n a_k x_0^{(k-1)} = a_0 \sum_{k=1}^m c_k x_0^{(k-1)}. \quad (20)$$

it is stated that the infinite integrals can be comparatively easily evaluated. The error is evaluated by applying the inequality of Bunyakovskiy. Two numerical examples are given. A case of possible instability is indicated. There are 6 figures and 10 Soviet-bloc references.

ASSOCIATION: Novosibirskiy elektrotekhnicheskiy institut (Novosibirsk Electrotechnical Institute)

SUBMITTED: July 12, 1961

Card 3/3

BAKHOVETS, B.A.; LYSHCHINSKIY, G.P.

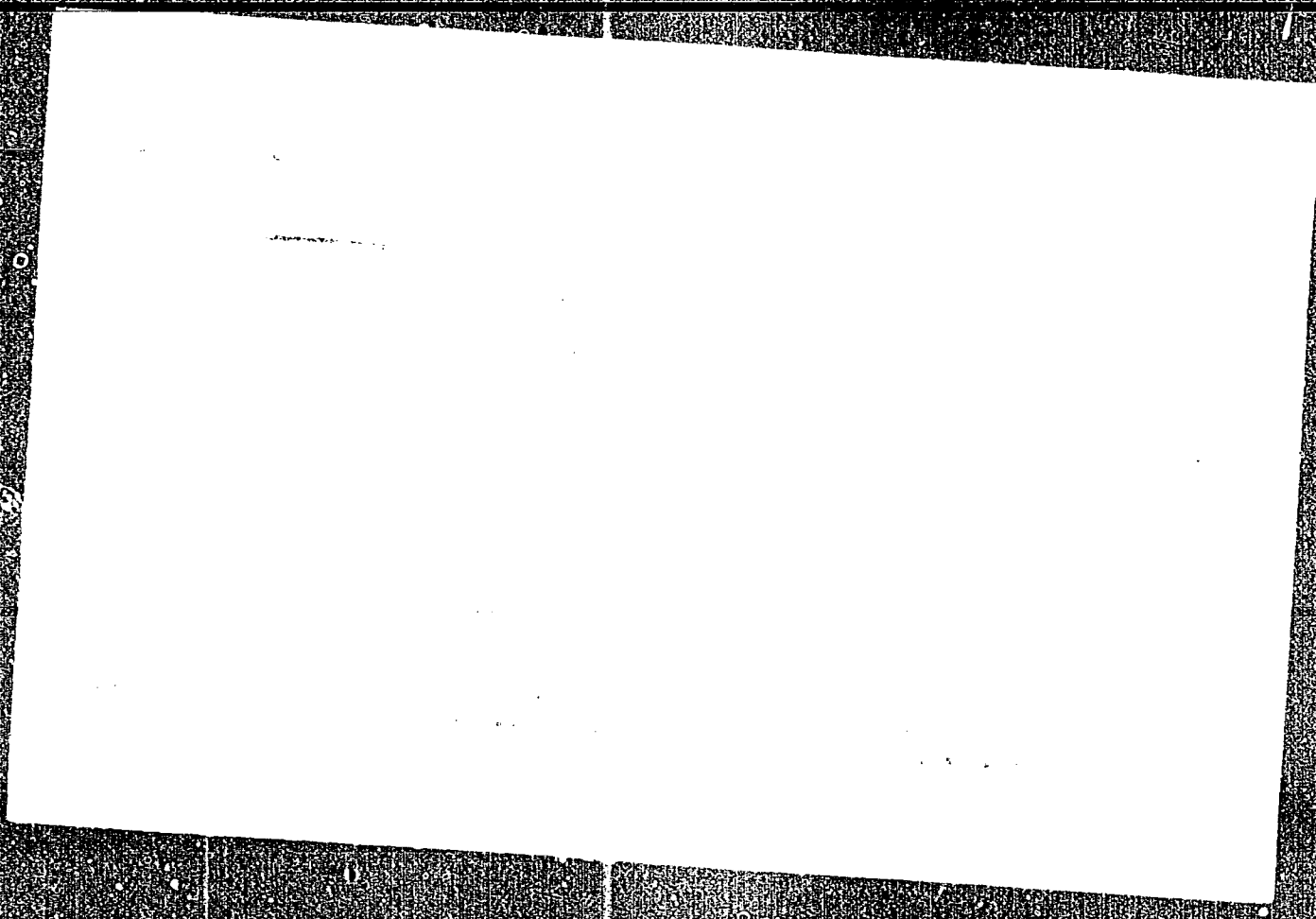
Solution of some problems of the invariance theory using a differentiation method. Izv. SO AN SSSR no.10 Ser. tekhn. nauk no.3:  
126-130 '63.  
(MIRA 17:11)

1. Novosibirskiy elektrotekhnicheskiy institut.



"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2

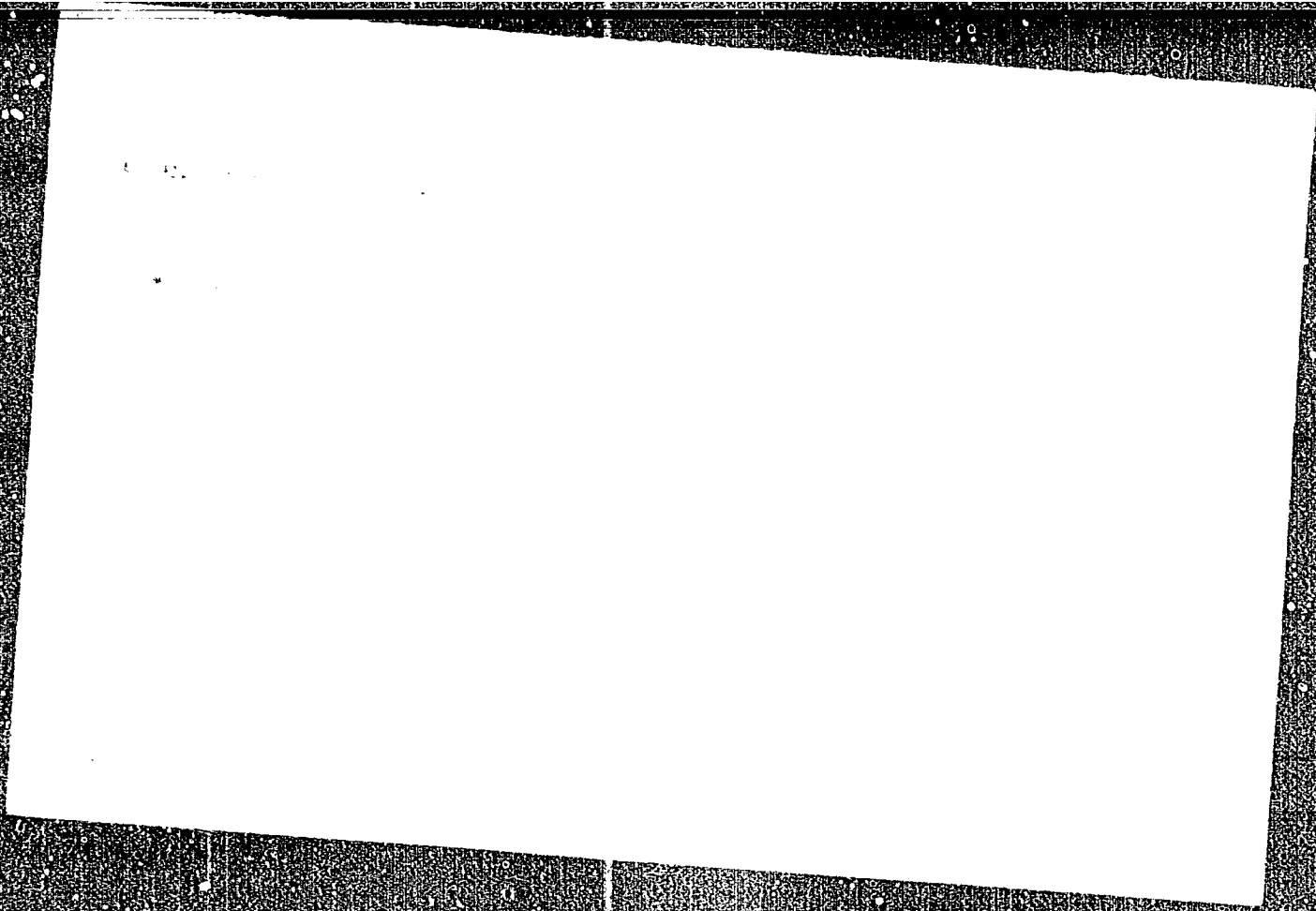


APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2"

"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2



APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2"

L 26457-66 EWT(d)/EWP(1) IJP(c) BC  
ACC NR: AP6017397

SOURCE CODE: UR/0144/63/000/009/0994/0997

AUTHOR: Balkhovets, Boris Afanas'yevich (Senior lecturer)

ORG: Department of Electric Drive and Automation of Industrial Plants, Novosibirsk  
Electrotechnical Institute (Kafedra elektroprivoda i avtomatizatsii promyshlennyykh  
ustanovok Novosibirskogo elektrotekhnicheskogo instituta)

TITLE: Comparison of two power-drive automatic controls according to the optimal law

SOURCE: IVUZ. Elektromekhanika, no. 9, 1965, 994-997

TOPIC TAGS: automatic control system, positive feedback, EMF, electric generator,  
electric motor

ABSTRACT: Automatic control systems with positive feedback have recently be-  
gun to be employed to increase the operating speed of intermittent power  
drive. So far, however, the literature does not contain any data on compari-  
sons of these systems with positive feedback to the generator EMF and to the  
motor RPM respectively, from the standpoint of operating speed. To fill this  
gap, the author presents a comparison of transient processes (startup and  
shutdown) in standard automatic control systems of this kind. On the basis  
of calculations of the pertinent variables it is shown that the optimal con-  
trol system with positive feedback with respect to motor RPM displays fast  
response and a closer approximation of the transient process to the specified.

Cord 1/2

UDC: 621.374.621-52

L 26457-66

ACC NR. AF 0017397

process than the optimal control system with positive feedback with respect to generator EMF, since the operating speed of the former system is 0.76 sec compared with 0.916 sec for the latter system, i. e. 28% higher and since, moreover, the transient component of error also gets damped more rapidly in the system with positive feedback with respect to motor RPM. Orig. art. has: 1 figure and 9 formulas. [JPRS]

SUB CODE: 09 / SUBM DATE: 18Dec62 / ORIG REF: 006

Cord 2/2

05237-01 ENF(K)/ENF(H)/ENF(Q)/ENP(1)/ENP(V)

ACC NR: AR6020528

SOURCE CODE: UR/0372/66/000/001/G003/G004

AUTHOR: Bakhovets, B. A.

TITLE: Synthesis of correcting devices in linear automatic control systems according to the specified transient process curve

SOURCE: Ref zh. Kibernet, Abs. IG23

REF SOURCE: Mezhevuz. sb. tr. Zap. -Sib. sovet po koordinatsii i planir. nauchno-issled. rabot po tekhn. i yestestv. naukam, vyp. 4, 1965, 3-11

TOPIC TAGS: ~~automatic control system~~, error correction, linear automatic control system, differential equation

ABSTRACT: It is proposed that the synthesis of parallel- and series-connected correcting elements be based on the analytic expression of the desired transient process curve representing a solution of a second-order differential equation and selected according to the principal quality indicators on taking into account the restrictions on derivatives. Then the error in the reproduction of a given law of motion does not exceed 7% -- which is quite acceptable in engineering calculations -- even for a rough approximation of the desired correcting

Card 1/2

UDC: 62-501.133

L 05239-67

ACC NR: AR6020528

device. 7 illustrations. Bibliography of 6 titles. V. M. [Translation of abstract]

SUB CODE: 09, 12/

Card

2/2

ACC NR: AR6015992

SOURCE CODE: UR/0271/65/000/012/A008/A008

AUTHOR: Bakhovets, B. A.

TITLE: Determining switching points in an automatic control system with a variable block diagram

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika, Abs. 12A48

REF SOURCE: Mezhdvuz. sb. tr. Zap.-Sib. sovet po koordinatsii i planir. nauchno-issled. rabot po tekhn. i yestestv. naukam, vyp. 4, 1965, 37-41

TOPIC TAGS: electric motor, switching circuit, automatic control parameter

ABSTRACT: A method is presented for determining switching points in automatic control systems of electric drives under condition that at the instant either the block diagram or its parameters are changed the rotating speed of the motor is equal to zero. A simple technique is proposed for determining the switching moment as a function of motor speed and acceleration. It is shown that when the acceleration (deceleration) of the motor in transient conditions is maintained constant by the automatic control system, the switching point can be calculated analytically. [Translation of abstract] 3 illustrations and bibliography of 7 titles. V. M.

SUB CODE: 09

Card 1/1

UDC: 62-501.133

ACC NR: AR6017572

SOURCE CODE: UR/0196/66/000/001/K003/K003

AUTHOR: Bakhovets, B. A.

TITLE: Determination of switching points in certain automatic control systems with variable functional circuits

SOURCE: Ref. zh. Elektrotehnika i energetika, Abs. 1K12

REF SOURCE: Mezhevuz. sb. tr. Zap.-Sib. sovet po koordinatsii i planir. nauchno-issled. rabot po tekhn. i yestestv. naukam, vyp. 4, 1965, 37-41

TOPIC TAGS: control circuit, switching circuit

TRANSLATION: A method of determining switching points in automatic control systems for electric drivers is given, with the condition that at the time the functional circuit is switched, the speed of the motor is equal to zero. A simple computing instrument is proposed for determining the switching time as a function of speed and motor acceleration. It is shown that in cases where acceleration (or deceleration) of the motor in transition processes is maintained constant, the switching point can be computed analytically. 3 illustrations, 7 references. V. Mostitskiy.

SUB CODE: C913

UDC: 62-83:62-52

Cord 1/1



KROKHA, V.A.; SUVORINA, L.N.; BAKHOVKIN, A.M.

Technical and economic analysis of gear wheel manufacture by  
knurling. Kus.-shtam. proizv. 4 no.5:39-45 My '62. (MIRA 16:5)  
(Gear cutting)

c  
u

S/226/63/000/001/015/016  
E194/E135

**AUTHORS:** Krokha, V.A., and Bakhovkin, A.M.

**TITLE:** A progressive [powder metallurgical] method of making gear wheels (Review)

**PERIODICAL:** Poroshkovaya metallurgiya, no.1, 1963, 104-111

**TEXT:** A press tool used by Ford (U.S.A.) to make oil pump pinions is described; the special feature of the design is that the pinion is both pressed and ejected in the same tool. Also described is the procedure adopted by the firm Merriman Brothers Inc. (U.S.A.) for making cylindrical pistons with skew teeth. The pinions require no further machining, the tolerance on outside diameter for the biggest pinion is 0.1 mm and for the smallest, 0.05 mm. The tolerance on internal diameter is 0.025 mm. Oil pump pinions made during 1958-1959 in the Laboratoriya poroshkovoy metallurgii BPI (Powder Metallurgy Laboratory of BPI) were tested on factory rigs at the KhTZ and under production conditions on 250 tractors type DT-54 (DT-54). The pinions worked for the guaranteed 3000 hours with little wear. British work on pistons made of carbides of Ti, W and others is also described.

Card 1/2

A progressive [powder metallurgical]... S/226/63/000/001/015/016  
E194/E135

Until powder metal gears were introduced at the ГАЗ (GAZ) works for use in oil pumps, as many as 60 engines a day were rejected for noise but the problem has now been fully overcome. The use of powder metallurgy methods to make gears of complicated shape may be justified for relatively short runs of 700 - 1000 items per year.

There are 6 figures and 2 tables.

ASSOCIATION: Eksperimental'nyy nauchno-issledovatel'skiy institut  
kuznechno-pressovogo mashinostroyeniya  
(Experimental Scientific Research Institute of  
Forged and Pressed Machinery)

SUBMITTED: December 1, 1961

Card 2/2

KROKHA, V.A., inzh.; SUVORINA, L.N., inzh.; BAKHOVKIN, A.M., inzh.

Analyzing the production of gear wheels by the knurling method.  
[Nauch. trudy] ENIKMASHn 7:55-69 '63. (MIRA 16:7)

(Gearing) (Forging)

KROKHA, V.A., inzh.; SUVORINA, L.N., inzh.; BAKHOVKIN, A.M., inzh.

Technical and economic indices of manufacturing gear wheels by  
press forging. [Nauch. trudy] ENIKMASHa 7:90-110 '63.

(MIRA 16:7)

(Gearing) (Forging—Costs)

KROKHA, V.A.; PROTOPOV, O.V.; BAKHOVKIN, A.M.

Analysis of the technological and economic indices of gear wheel  
forging with finishing of the gears. Kuz.-shtam.preisv. 5 no.7:  
31-35 JI '63. (MIRA 16:9)

LYUBIMOV, I.M.; PROTOPOPOV, O.V.; BAKHOVKIN, A.M.; SEN'KIN, I.T.

Electric upset forging of heat-resistant and stainless steels and  
alloys. Kuz.-shtam.proizv. 6 no.1:5-10 Ja '64. (MIRA 17:3)

BAKHOVKINA, L. N.

"System of Distributing Income in Collective Farms," Izd-vo AS USSR, Moscow, 1951



BAKHOVKINA, Lidiya Nikolayevna; KUZNETSOV, V.V., red.; MAKAROVA. A.N.,  
tekhn. red.

[State procurement of farm produce on collective farms] Gosudar-  
stvennye zakupki sel'skokhoziaistvennykh produktov v kolkhozakh.  
Moskva, Gos.izd-vo iurid.lit-ry, 1961. 150 p. (MIRA 14:12)  
(Produce trade)

EXCERPTA MEDICA Sec 6 Vol 13/1 Internal Med. Jan 59

191. THE USE OF ASCORBIC ACID IN ATHEROSCLEROSIS (Russian text) -  
Bikhovskaya A. V. - SOV. MED. 1957, 1 (77-82)

The author studied changes in the coagulability of blood (Fonio's method) and in certain other factors related to clot formation (level of prothrombin, fibrinogen, platelets, total protein and protein fractions, viscosity of blood) in 112 individuals comprising 12 healthy people, 20 ulcer patients and 80 atherosclerosis patients. I.v. injection of 500 mg. ascorbic acid over 10 days did not produce significant changes in the coagulability of blood in healthy people. In patients with gastric or duodenal ulcers similarly treated, a small increase in the coagulability of blood was observed in some cases. In patients with atherosclerosis the administration of ascorbic acid produced increase and decrease of coagulability in equal numbers of patients. Increased coagulability was not observed after 200 mg. ascorbic acid. After i.v. injection of ascorbic acid regular changes were not observed in the total protein, protein fractions or fibrinogen nor in the viscosity of the blood or number of platelets; the level of cholesterol fell in patients with atherosclerosis while in the group of healthy people and in the ulcer patients no noticeable lowering of the total blood cholesterol was observed. Treatment of atherosclerotic patients is not accompanied by increased tendency to clot formation and is quite permissible. It is essential to avoid prescribing ascorbic acid to patients with recent thrombotic symptoms (coronary thrombosis, thrombophlebitis etc.). (S)

BAKHCHVTSOV, B. A.

"Synthesis of Systems for Automatic Control of Starting and Stopping of Electric Drives"

Dissertation for the degree of Doctor of Technical Sciences  
defended at the Moscow Power Engineering Institute, April 1963.

Moscow, Elektrichestvo, No.9 Sept pp 94-95.

BAKHRAKH, A.M.

"The Works of M.A. Vil'yev on the Theory of Lunar Motion,"

1949

BAKIDRAXH, A.M.

"A.N. Krylov and Optic Apparatus Used at Sea,"

1949

BAKHIAKH, A.M.

"History of Physicomathematical Sciences"  
Vol. 111, No. 3, (25) May/Jun '48 USSR

Usp. Mat. Nauk

BAKIRAKH, A.M.

"A.N. Krylov's Optical Instruments," Prioroda, No. 3, 1949

BAKHRAKH, A. M.

USSR/Mathematics - History  
Mathematics - Applied

May/Jun 48

"News on the Committee for the History of Physicomathematical Sciences" 2pp

"Uspekhi Matemat Naik" Vol III, No 8 (25)

The 30th meeting, with S. I. Vavilov presiding, heard two lectures. "The Works of M. A. Vil'yev on the Theory of Lunar Motion," by M. F. Subbotin and A. N. Krylov, and "Optic Apparatus Used at Sea," by A. M. Bakhrakh.

PA 17/49T71



BAKHRAKH, A. M.

Optical Instruments

"From the history of Optical instrument making," A. M. BAKHRAKH.  
Reviewed by Prof. U. B. Gogoberidze, Vest. Mash., 32, No. 5, 1952.

Monthly List of Russian Accessions, Library of  
Congress, October 1952. UNCLASSIFIED.

BAKHRAKH, A.M., kandidat tekhnicheskikh nauk.

A.S.Popov at the Nishnii Novgorod exhibition. Elektrichestvo  
no.2:72-74 F '54. (MLRA 7:2)  
(Popov, Aleksandr Serafimovich, 1863-1949)  
(Gor'kiy--Exhibitions)

BAKHRAKH, A.M.; KNYAZEV, G.A.

V.I. Lenin and the plan of scientific technological work. Izv. vys.  
ucheb. zav.; prib. 3 no. 2:348 '60. (MIRA 14:4)

(Lenin, Vladimir Il'ich, 1870-1924)

BAKHRAKH, A.M., kand. tekhn. nauk

A.N. Krylov's thoughts on certain aspects of organizing scientific  
and technological research. Sudostroenie 29 no.8:10-12 Ag '63.  
(MIRA 16:10)

(Research)

(Krylov, Aleksei Nikolaevich, 1863-1945)

BAKHRAKH, D.I.; SHNIVKHMEN, B.Ye.

Effect of noises of varying intensity on the hearing in workers.  
Probl.fisiol.akust. 1:166-173 '49. (MIRA 10:11)  
(NOISE) (HEARING)

MOLSEYEV, Yu.V.; BAKHRAKH, E.Ya.; VINNIK, M.I. (Moscow)

Kinetics of hydrolysis of N-methylacetamide in KOH aqueous solutions. Zhur. fiz. khim. 37 no.4:784-790 Ap '63.

(MIRA 17:7)

1. Akademiya nauk SSSR, Institut khimicheskoy fiziki.

SHESTOPEROV, S.V., doktor tekhn.nauk; BAKHRAKH, G.S., inzh.; ZUBETS, V.N., inzh.

Waste dust of cement plants used as a mineral powder for asphalt concrete. Avt.dor. 27 no.11:25-27 N '64.

(MIRA 18:4)

BERENSHTEYN, F.Ya.; BAKHRACH, I.I.

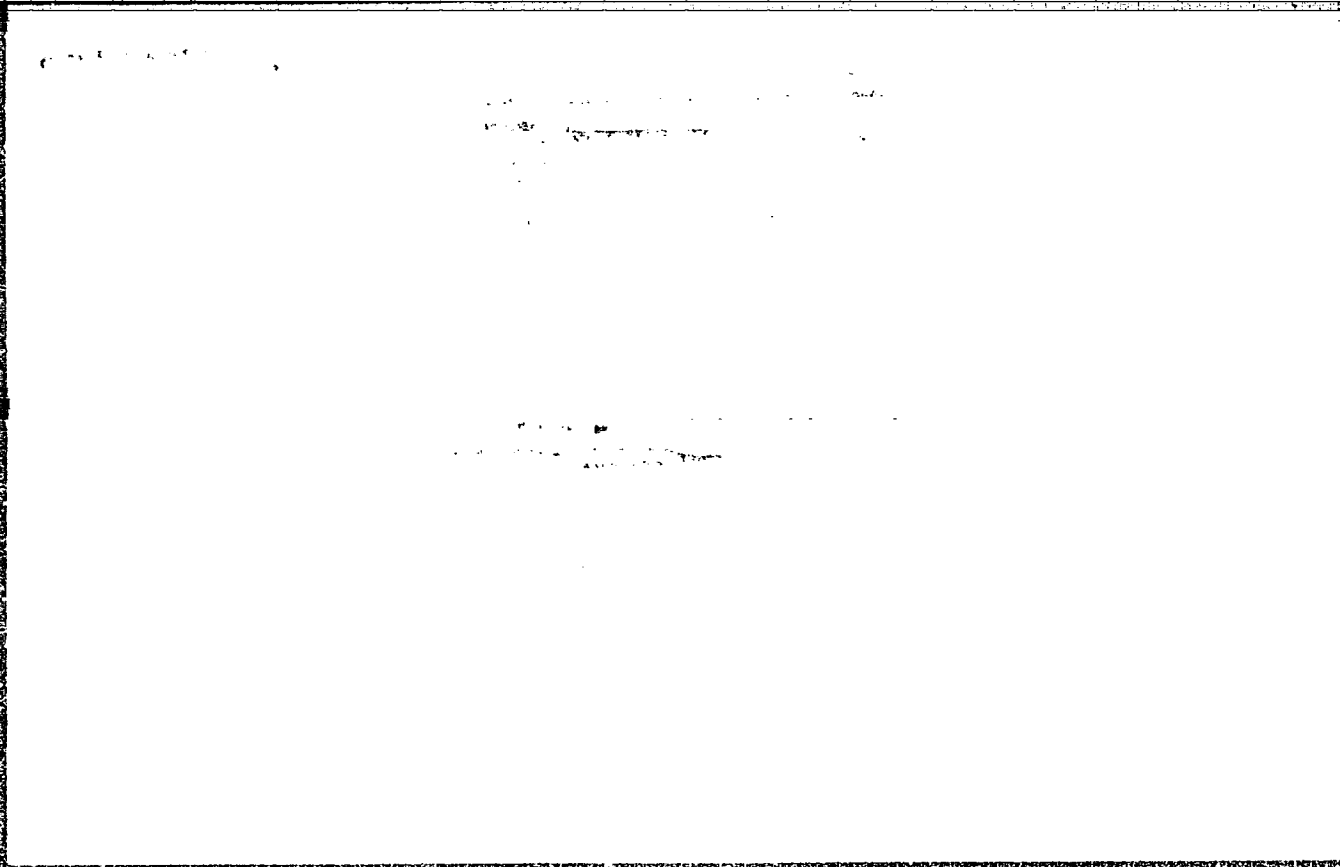
Method for determining acid agglutination reaction of erythrocytes.  
Lab. delo 7 no.1:21-24 Ja '61. (MIRA 14:1)

1. Kafedra biokhimii (sav. - prof. F.Ya. Berenshteyn) Vitebskogo  
veterinarnogo instituta.  
(ERYTHROCYTES) (AGGLUTINATION)



"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2



APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2"

SCHERKUNOFF Sergei, A.; FRIIS, Harald, T.; BAKHRAKH, L.D., redaktor,  
[translator]; MASHAROVA, V.G., redaktor; KOROZEV, N.N.,  
tekhnicheskii redaktor

[Antennas; theory and practice. Translated from the English.]  
Antenny; teoriia i praktika. Perevod s angliiskogo. Moskva,  
Izd-vo "Sovetskoe radio," 1955. 603 p. (MLRA 9:4)  
(Radio--Antennas)

BAKBRAXH, L. D.

L. D. BAKBRAXH, V. M. Grishina: "On the construction of antennas with optimum patterns." Scientific Session Devoted to "Radio Day", May 1958, Trudrezervizdat, Moscow, 9 Sep. 58

Certain questions of principle to obtain optimum patterns as well as questions of computing image antennas which would guarantee optimum patterns are analyzed. In particular, problems of obtaining a pattern with optimum relations between the pattern width (at the null and half-power levels) and the secondary emission levels for linear antennas and antennas with a circular aperture are analyzed.

The results of investigating optimum relations of another kind. An optimum between the gain and the pattern characteristics, and optimum monotonic pattern, etc, are analyzed.

Methods are given for computing a two-mirror antenna which would guarantee an optimum pattern. Experimental results are presented of minnors computed in order to obtain the maximum gain and the optimum relations between the pattern width and the secondary (side) emission level.

В. М. Бондарь  
Эффективность и экономичность антенных  
устройств радиотехнических систем

В. М. Бондарь  
Планирование антенных устройств на станциях  
В. М. Бондарь  
Руководитель А. Р. Бондарь

9 июня  
(с 10 до 16 часов)

В. М. Бондарь  
Вопросы проектирования антенных устройств для  
радиотехнических систем

А. М. Бондарь  
В. А. Бондарь

Антенны радиотехнических систем для радиотехнических  
систем радиотехнических систем радиотехнических систем

В. М. Бондарь  
Антенны для радиотехнических систем радиотехнических систем

В. М. Бондарь  
Антенны для радиотехнических систем радиотехнических систем

А. А. Бондарь  
Исследования антенных устройств радиотехнических систем

9 июня  
(с 10 до 16 часов)

В. М. Бондарь  
В. А. Бондарь  
В. М. Бондарь

Вопросы проектирования антенных устройств для радиотехнических систем

В. М. Бондарь  
Вопросы проектирования антенных устройств для радиотехнических систем

В. М. Бондарь  
Исследования антенных устройств радиотехнических систем

В. М. Бондарь  
Исследования антенных устройств радиотехнических систем

В. М. Бондарь  
Исследования антенных устройств радиотехнических систем

report submitted for the Centennial Meeting of the Scientific Technological Society of  
Radio Engineering and Electrical Communications in. A. G. Popen (VUBR), Moscow,  
6-12 June. 1959

9.1912

24873 S/109/61/006/007/013/020  
D262/D306

AUTHORS: Bakhrakh, L.D., and Vavilova, I.V.

TITLE: Spherical two-mirror antennae

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 7, 1961,  
1146 - 1156

TEXT: In the present article the authors consider problems arising in the design of a two-mirror spherical antenna system, with special attention paid to questions of decreasing the dimensions of the small mirror and of the accuracy of installation influencing the directional properties of the antenna. Two design methods are analyzed. The first is based on the use of focal curves of

$$\begin{aligned} X &= \cos \varphi \left( 1 - \frac{\cos 2\varphi}{2} \right), \\ Y &= \sin^2 \varphi R_0. \end{aligned} \quad (7)$$

in which symbols are as given in Fig. 6 and  $R_0$  is the large mirror-  
Card 1/75

Spherical two-mirror antennae

24873

S/109/61/006/007/013/020  
D262/D306

radius. Hence the small mirror profile is determined assuming one point at the small mirror surface and the position of radiator. This method is said to be very useful for graphical design of the small mirror profile. The second method discussed is the method of small mirror design based on wave fronts (Ref. 8: Kellecher, J. Appl. Phys. 1950, 21, 6, 573) of Hamilton. In this case the small mirror is a surface of rotation and the problem reduces to determining the profile in a plane, assuming unity radius of the large mirror and using polar system of coordinates. The small mirror profile coordinates in this case are given as

$$R_{xsm} = Y_x - \cos 2\theta P, \quad R_{ysm} = Y_y - \sin 2\theta P, \quad (15)$$

in which symbols are as given in Fig. 7 and where P is given by

$$P = \frac{C^2 - [(Y_x - d)^2 + Y_y^2]}{2[C - \cos 2\theta (Y_x - d) - \sin 2\theta Y_y]}, \quad (16)$$

Card 2/75

21873

S/109/61/006/007/013/020  
D262/D306

Spherical two-mirror antennae

in which  $C$  is the distance between  $\bar{Y}_1$  and  $\bar{X}_1$ . The wave front method permits not only simple design of the small mirror but also a rational disposition of the other system elements. Certain peculiarities of design are discussed. Numerical analysis has shown that the ratio of the small mirror aperture to the actual large mirror aperture should not exceed 0.25 and at the same time that of the small mirror should not be less than  $4-5 \lambda$ . The magnitude of actual aperture  $D_{ap}$  in a spherical two mirror system is closely related to its geometrical dimensions, namely to the position of the small mirror aperture  $R_{xap}$ , its magnitude  $2R_{yap}$  and the position of the radiator. Formulae (15) permits the establishment of the dependence of angle  $\theta$  the sine of which is given by the ratio  $D_{ap}/D$  of the actual aperture to the  $D$  diameter of the large mirror and the values of  $R_{xap}$  and  $R_{yap}$ . In designing antennae of large dimensions the allowable errors in positioning the structure elements have to be known, because this positioning will eventually determine the directional

Card 3/75

24873

S/109/61/006/007/013/020  
D262/D306

Spherical two-mirror antennae

properties of the antennae. The problem is solved by again using the method of wave fronts, since it permits the determination of the shape of the wave front at the antenna output with the displacement of the radiator and of the small mirror position with respect to the design values. The distortion of the wave front at the antennae output will depend ultimately on parameters  $m$ ,  $n$ ,  $a_1$ ,  $b_1$ ,  $\varphi$ , where  $m$ ,  $n$  - displacement of the radiator along the  $x$  and  $y$  axis respectively with respect to the design value of its position.  $a$  and  $b$  - the respective displacement of the mirror along  $x$  and  $y$  - the angle of rotation of the mirror with respect to the  $x$ -axis. By determining the coordinates of the displaced mirror  $R'_{xM}$  and  $R'_{yM}$

$$\begin{aligned} R'_{xM} &= (R_{xM} - a) \cos \varphi + (R_{yM} - b) \sin \varphi, \\ R'_{yM} &= (a - R_{xM}) \sin \varphi + (R_{yM} - b) \cos \varphi, \end{aligned} \quad (20)$$

where  $R_{xM}$ ,  $R_{yM}$  are calculated coordinates, graphs can be drawn, showing new various ratios, if the practical to theoretical values  
Card 4/75



Spherical two-mirror antennae .

24873

S/109/61/006/007/013/020  
D262/D306

influence the performance and the tolerances in positioning the elements can be hence determined. There are 13 figures and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc. The references to the 4 most recent English-language publications read as follows: A.K. Head, Nature, 1957, 179, 6; W. Rotman, IRE Trans., 1958, AP 6, 1; J.A. Jackson, E.C. Goodall, Marconi Rev., 1st Quarter, 1958, 21, 128, 30; J.M. Flaherty, E. Kudak, IRE Nat. Convention Record, Part 1, 1958, 21, 128, 30.

SUBMITTED: October 28, 1960

Card 5/75

FEL'D, Ya.N.; BAKHRAKH, L.D.

Present state of the development of antenna synthesis theory.  
Radiotekh. i elektron. 8 no.2:187-205 F '63. (MIRA 16:2)  
(Antennas (Electronics))



Card

1/3

a channel is considered with the same area of its surface as a single antenna; reduced to the following two problems: 1) determination of the gain of twin- or multi-channel antennas; 2) determination of the conditions under which the antenna studied has the same gain factor as a single-channel antenna of identical dimensions. The operations of the antenna are determined by the geometry of the antenna and the conditions of its operation. The gain factor of the antenna is determined by the geometry of the antenna and the conditions of its operation. The gain factor of the antenna is determined by the geometry of the antenna and the conditions of its operation.



ACCESS ON NR

As the frequency of the sound increases, the phase shift of the reflected wave increases. The phase diagrams on the gain factor of two-mechanism and multi-mechanism reflections of sound express the agreement of the results of the factor of transmission theory. We conclude that the gain of a two-mechanism reflection is determined by both the amplitude and the phase patterns of the incident wave. In all cases 5 figures and 18 formulas.

ASST. DIR. IN. CHARGE, AVIATION DIVISION, U.S. NAVY AVIATION INSTITUTE

AM-115 76

RM 100

SL 8 CODE. EC

NO 536 2-14-72

Q-458: 7

NO REL 30V: 001

OTHER: 001

and 33

scopes

--- of large reflector radiotele-

SOB CODE: AA

NR REF 51

Card 2/2



1. Title: Two-Mirror Antenna with Phase Error Compensation

2. Author: A. I. Ayzenberg, A. I. Deryugin

3. Date: 1980, 1981

4. Re: Ayzenberg, A. I.; Deryugin, A. I.; Arznetan, M. I. Abstract

5. Summary: Two-mirror antenna with phase error compensation

6. Subject: Regulated frequency, antenna, phase error compensation

7. Title: Two-mirror antenna, phase error compensation

ABSTRACT: To reduce phase errors in the aperture of the proposed two-mirror antenna and increase the noise level of the antenna, a method is proposed for compensating phase errors in the aperture of the antenna by means of a system of phase shifters. The method is based on the use of a system of phase shifters in the aperture of the antenna. The method is based on the use of a system of phase shifters in the aperture of the antenna. The method is based on the use of a system of phase shifters in the aperture of the antenna.

8. Author: A. I. Ayzenberg

Card 1/1

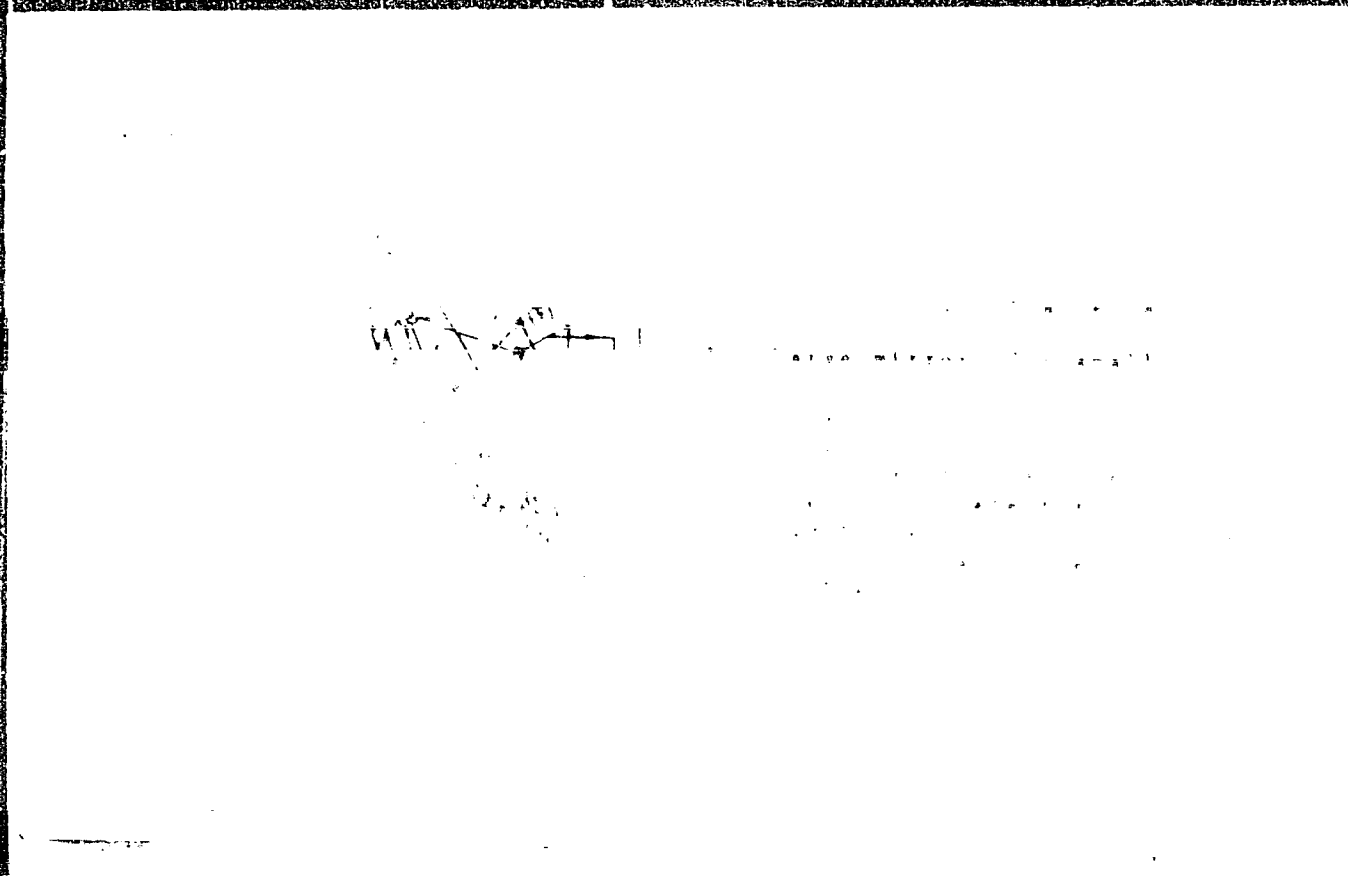
ACCESSION NR: AP5015254

SUBMITTED: 11/1/54

RECEIVED: 11/1/54

"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2



APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2"

ACC NR: AP7002933

SOURCE CODE: UR/0020/66/171/006/1309/1312

AUTHOR: Bakhrakh, L.D. (Corresponding member AN SSSR); Kurochkin, A.P.

ORG: none

TITLE: The use of optical systems and holographic methods to regenerate radiation patterns of shf antennas from field measurements in the Fresnel zone

SOURCE: AN SSSR. Doklady, v. 171, no. 6, 1966, 1309-1312

TOPIC TAGS: shf antenna, antenna radiation pattern, OPTIC SYSTEM, HOLOGRAPHY

ABSTRACT: The feasibility is considered of using holographic methods and optical models based on the known properties of coherent optical systems to determine radiation patterns of shf antennas. Schematically, such a method of regenerating the radiation pattern consists of the following: the distribution of the shf field is fixed at some distance from the antenna aperture. Its optical model is then built to a certain scale and a distribution similar to the measured one is subsequently formed in a field of coherent light. The field thus obtained is converted by a system of lenses arranged to produce a distribution corresponding to the radiation pattern in some plane at the output.

Card 1/2

UDC: 621.396.671

ACC NR: AP7002933

A theoretical analysis is made of the above technique using the Huygens-Kirchoff principle. It is noted that, although the proposed technique makes it possible, in principle, to obtain a solution to the problem of shf field distribution, its direct application is difficult because the phase-amplitude distribution in the antenna field must be measured and an optical model, which modulates the light with respect to phase and amplitude, must be used. Practical measurements of the shf field and formation of a corresponding light field were therefore made using holographic methods. Experiments were conducted with an antenna operating in a 3-cm waveband. The antenna consisted of two linear radiators about 15 cm long, lying 29 cm apart on the same straight line. The region in which the radiation pattern was formed was at a distance of 16 m. Reference signals were generated by an open-end waveguide acting as a spherical wave source. Intensity distribution in the interference pattern was measured by a probe moving along a circle ( $r_0 = 1.8$  m). Recordings were made on film to the scale  $m = 150$ . The obtained hologram was placed in a converging spherical wave ( $\lambda = 0.63 \mu$ ). After conversion by means of a photoelectric circuit in the optical system the radiation pattern was measured. [JR]

SUB CODE: 09.20/SUBM DATE: 14Sep66/ ORIG REF: 003/ OTH REF: 005/  
ATD PRESS: 5114

Cord 2/2

SOV-109-3-6-14/27

AUTHORS: Bakhrakh, L. E., Kozel', I. Sh.

TITLE: The Problem of Focussing of a Hollow Cylindrical Electron Beam in a Longitudinal Magnetic Field (K voprosu o fokusirovke pologo tsilindricheskogo elektronno potoka v prodol'nom magnitnom pole)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 6, pp 819-825 (USSR)

ABSTRACT: An attempt is made to investigate the problem of focussing of a hollow cylindrical electron beam in the absence of an axial conductor inside the beam. The problem is analysed under the following assumptions: (1) The magnetic field is axially symmetrical and its longitudinal component is independent of the radial distance; (2) The wavelength of the axial change of the surface of the electron beam is large in comparison with its diameter. The radial motion of the electrons can be described by the following differential equation (Refs.2 and 4):

$$\frac{d^2 r}{dt^2} + r \left( \frac{\eta B}{2} \right)^2 - r \left( \frac{\eta B_c}{2} \frac{r_c^2}{r^2} \right)^2 = \frac{\eta^{1/2} I}{2\sqrt{2} \pi \epsilon_0 U^{1/2} r} \quad , \quad (1)$$

Card 1/4

SOV-109-3-6-14/27

The Problem of Focussing of a Hollow Cylindrical Electron Beam in a Longitudinal Magnetic Field

where  $\epsilon_0$  is the permittivity of free space,  $B_c$  and  $B$  are the magnetic inductions at the cathode and at a given point of the system, respectively,  $r_c$  is the radius characterising the position of an electron at the cathode,  $\eta$  is the ratio of the electron charge to its mass and  $I$  and  $U$  are the current and voltage of the beam. If  $r = r_m(1 + \delta)$ , where  $\delta \ll 1$ , and  $r_m$  is the so-called equivalent radius, Eq.(1) can be written in the form of Eq.(2), where the various parameters are defined by Eqs.(3). The solution of the equation is in the form of Eq.(4). By finding the two integration constants of Eq.(4), the solution can be written in the form of Eq.(5). This can be used to define the "wavyness" of the external boundary of the beam,  $\delta_{\text{make}}^e$ , and that of the internal boundary,  $\delta_{\text{make}}^i$ . The

Card 2/4

SOV-109-3-6-14/27

# The Problem of Focussing of a Hollow Cylindrical Electron Beam in a Longitudinal Magnetic Field

investigation of the formula for  $\delta^e$  and  $\delta^i$  shows that it is impossible to reduce the "wavyness" to zero simultaneously at both the boundaries; this effect is illustrated in Figs. 1 and 2. If the magnetic field is given by:

$$B = B_0 \cos x, \quad (7)$$

where  $x = \frac{2\pi}{p} z = \omega t$ , where  $p$  is the period of the

focussing system and  $z$  is the axial component, Eq.(1) can be written in the form of Eq.(8), from which  $\delta$  can be expressed in terms of Eq.(9); the various symbols of Eq.(9) are defined by Eqs.(10), (11), (12) and (13). The solution of Eq.(9) is in the form of Eq.(14), where  $B_a = B_0 \cos x_a$  is the value of the magnetic induction at the anode. The "wavyness" of the external boundary  $\delta^e$  and the internal boundary  $\delta^i$  is determined for the case of  $B_{a=0}$ ; the resulting formulae are shown on p 823; graphically  $\delta^i$  as a function of  $x$  is represented in Fig.3. If it is assumed that  $x = 1$ , the "wavyness" of the external and internal

Card 3/4



SOV-109-3-6-14/27

The Problem of Focussing of a Hollow Cylindrical Electron Beam in a Longitudinal Magnetic Field

boundaries can be expressed by Eqs.(17) and (18) respectively; the equations are plotted in Fig.4, where Curve 1 corresponds to the "wavyness" of the internal boundary while the remaining curves represent the "wavyness" of the external boundary for various values of  $\beta$ . There are 4 figures and 5 references, of which 4 are English and 1 German.

SUBMITTED: January 12, 1957.

1. Electron beams - Focusing
2. Magnetic field - Applications

Card 4/4

29.6716

S/058/62/000/004/138/160  
A061/A101

AUTHORS: Golubkov, P. V., Bakhrakh, L. E., Kozel', I. Sh., Kozlov, I. O.,  
Medoks, V. G.

TITLE: A study of some electron beam properties

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 16, abstract 4Zh106  
"Uch. zap. Saratovsk. un-t", 1960, v. 69, 41 - 56)

TEXT: This is a report of results obtained from theoretical and experimental investigations of the structure of long electron beams of different configurations, moving in focusing fields. The pulsation factor of the internal and external boundaries of the hollow-cylindrical electron beam focused in constant and intermittent magnetic fields is calculated and represented graphically. It is shown how the pulsation factor can be restricted to given limits in a wide range of the beam voltage variation. Formulas and the respective diagrams concerning the pulsation of the internal and external boundaries of the hollow-cylindrical electron beam in centrifugal and electrostatic focusing are obtained. It is shown that pulsation is determined by the radial ratio of the internal and

Card 1/2

A study of some electron beam properties

S/058/62/000/004/138/160  
A061/A101

external boundaries of the beam. The effect of the space charge is considered. The density distribution over the cross section of the electron beam and the pulsation factor of its boundaries are experimentally investigated using a special mobile system of collectors. The curves of density distribution are plotted from (experimental) points, and are also observed by oscilloscope. The strip beam and the hollow-cylindrical beam in the longitudinal magnetic field are investigated. The distribution of electron velocities in electron beams is investigated experimentally. A cylindrical capacitor is used as velocity analyzer. The study was conducted in different beam cross sections, in a significant range of accelerating voltages and at different pressures of the residual gas. The existence of two maxima in the curve of velocity distribution is shown. The possible causes of this phenomenon are considered. ✓

G. Sh.

[Abstracter's note: Complete translation]

Card 2/2

20587

9.3140 (4/50 1140)

S/109/61/006/002/019/023  
E140/E435

AUTHORS: Bakhrakh, L.E. and Sulimin, A.D.

TITLE: On the Design of Ribbon-Beam Electron Guns

PERIODICAL: Radiotekhnika i elektronika, 1961, Vol.6, No.2,  
pp.333-336

TEXT: A simple derivation is given for the electrode shape necessary to form a stable ribbon beam from a cathode analogous to a sector of the inner surface of the outer cylinder of a cylindrical diode. The derivation leads to an electrode shape somewhat different from that obtained by J.R.Pierce (Ref.1) or D.E.Radley (Ref.2). Combined analytic and graphical procedures permit determining the conditions necessary for a "waist" to appear in the beam. In one experimental realization, a ribbon beam of 50 mA at an acceleration potential 800 to 1000 V and a current passage factor of 90 to 95% was obtained through an anode opening of 1 x 8 mm. There are 5 figures and 4 references: 1 Soviet and 3 non-Soviet.

SUBMITTED: February 18, 1960

Card 1/1

9,3140S/109/61/006/006/010/016  
D204/D303AUTHORS: Bakhrakh, L.E., and Zharkov, Yu.D.

TITLE: Geometric parameters of ion-focused electron beams

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 6, 1961,  
976 - 981

TEXT: The ionic focusing of solid and hollow cylindrical, and flat beams is analyzed using a simplified method which can extend the results of B.I. Davydov and S.I. Braginskiy (Ref. 1: K teorii gazovoy kontsentratsii elektronnykh puchkov, Sb., posvyashchenny 70-letiyu akad. A.F. Ioffe, Izd. AN SSSR, 1950, 72-91) to beams of these types. Among the non-magnetic methods of focusing, the ionic focusing is of some interest. The equilibrium state in ionic focusing is reached when the number of ions formed in unit time is equal to the number of ions lost through exit from the beam under the influence of the space-charge field. The thermal motion of electrons is of great importance under these conditions, since the

Card 1/4

S/109/61/006/006/010/016  
D204/D303

Geometric parameters of ...

transversal velocity component of this motion can be of the same magnitude as the focusing potential difference between the axis and boundary of the beam. It is assumed that the temperature of the electron gas varies according to an adiabatic rule when the diameter of the beam changes. With some further simplifying assumptions the author obtains equations for the motion of the boundary electron in a solid cylindrical, rectangular and hollow cylindrical beam, respectively. The balance equations, expressing the equilibrium condition of the beam, are:

$$p_+ = \frac{\sqrt{\frac{m_+}{2a}} s P v p_-}{\sqrt{\pi (p_+ - p_-)}}$$

$$p_+ = \frac{\sqrt{\pi} \sqrt{\frac{m_+}{2a}} s P v p_-}{2 \sqrt{2} \sqrt{\pi (p_+ - p_-)}}$$

$$p_+ = \sqrt{\frac{m_+}{2a}} \frac{s P v p_-}{\sqrt{\pi (p_+ - p_-)}} \frac{r^2 - r_a^2}{\sqrt{r^2 - r_a^2 + 2r_a^2 \ln \frac{r_a}{r}}}$$

Card 2/4

24469

S/109/61/006/006/010/016  
D204/D303

Geometric parameters of ...

where  $\rho_-$  is the electron density,  $\rho_+$  is the ion density,  $s$  is the specific ionization,  $P$  is the gas pressure,  $m_+$  is the ion mass. The motion equations obtained are completely identical with those derived in Ref. 1 (Op.cit.) with the more rigorous method of solving simultaneously the Poisson equation, the continuity equation, the equation of state and the kinetic equation. With the assumptions adopted these differential equations reduce to the linear form

$$\frac{d^2\delta}{dz^2} + \omega^2\delta = 0, \quad (4)$$

where  $\delta \ll 1$  is a quantity characterizing the ripple at the boundary of the beam, and  $\omega(P, U, T, s, I)$  determines the wavelength of the pulsations,  $\lambda$ , which is shown for two specific cases in tabulated form. The solution of Eq. (4) will be

$$\delta = \delta(0) \cos \omega z + \left(\frac{d\delta}{dz}\right)_0 \sin \omega z, \quad (5)$$

Card 3/4

24469

Geometric parameters of ...

S/109/61/006/006/010/016  
D204/D303

where  $\delta(0)$  and  $(d\delta/dz)_0$  correspond to the initial conditions when  $z = 0$ . Investigation of Eq. (5) enables the geometric parameters of ion-focused beams to be determined as functions of the operating conditions (gas pressure, electron velocity, beam current, etc.). The results are given graphically for the following cases: Equilibrium width of ion-focused flat beam as a function of the pressure; Equilibrium radius of ion-focused hollow cylindrical beam as a function of the pressure; Equilibrium width of flat beam as a function of the accelerating voltage; Equilibrium radius of hollow cylindrical beam as a function of the pressure for cylindrical beam; Wavelength of the pulsations at the outer boundary of a hollow beam as a function of the voltage; Amplitude of the pulsations against the accelerating voltage in a flat beam; Amplitude of the pulsations against the pressure for a flat beam. There are 1 table, 8 figures and 2 Soviet-bloc references.

SUBMITTED: June 18, 1960

Card 4/4



BAKHRAKH, L.E.

Evaluation of the effect of thermal velocities in electron beams.  
Radiotekh. i elektron. 6 no.4:656-659 Ap '61. (MIRA 14:3)  
(Electron beams)

BAKHRAKH, L.E.; SHARKOV, Yu.D.

Geometric parameters of ionically focused electron beams. Radiotekh.  
i elektron. 6 no.6:976-981 Je '61; (MIRA 14:6)  
(Electron beams) (Electronic apparatus and appliances)

34036

S/109/62/007/001/014/027

D266/D301

9,3130 (1003,1140,1141)

AUTHORS: Bakhrakh, L.E., and Medoks, V.G.

TITLE: Effect of thermal velocities on the spread of an electron beam

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 1, 1962,  
120 - 125

TEXT: The purpose of the paper is to study the electron trajectories of an electron beam in the presence of transverse thermal velocities. A simple model is adopted where an electron beam, obtained from a convergent gun, expands under the influence of its own space-charge forces. The authors begin the analysis with Newton's equation for the motion of an outer electron of a cylindrical electron beam. Assuming a slowly varying beam diameter the space-charge force is obtained from the Gauss theorem in the usual manner. Thermal velocities are taken into account by assuming that the electrons obey the gas laws. The pressure is then calculated and the force is obtained in the form  $p_1 = 2kT/r$  where  $k$  - Boltzman constant,  $T$  - ab-

Card 1/3

Effect of thermal velocities on the ...

<sup>34036</sup>  
S/109/62/007/001/014/027  
D266/D301

solute temperatures,  $r$  - radius of the outer electron. Using the equation  $Tr^2 = T_c r_c^2$  where  $T_c$  - cathode temperature,  $r_c$  - cathode radius, the authors arrive at:

$$\frac{d^2R}{dX^2} = \frac{A}{2R} + \frac{B}{R^3} \quad (4)$$

where  $R$  and  $X$  are normalized variables, and  $A$  and  $B$  are constants. Integrating (4) twice (first analytically and then numerically) the trajectory of the outer electron is obtained. The author compares his results with the more rigorous theory of W.E. Danielson et al. (Ref. 2: B.S.T.J. 1956, 35, 2, 375) and claims that his method leads roughly to the same agreement with experiments. Similar calculations are conducted for beams of a rectangular cross-section, in which case the trajectory equation is obtained in terms of tabulated functions (elliptic integrals). There are 7 figures and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to the English language publications read as follows: C.C. Cutler, M. E. Hines, Proc. IRE, 1955, 43, 3, 307; W.E. Danielson, J.L. Rosen-

Card 2/3

34036

Effect of thermal velocities on the ... 8/109/62/007/001/014/027  
feld, J.A. Saloom, Bell system Techn. J., 1957, 35, 2, 375.  
D266/D301

SUBMITTED: June 19, 1961

Card 3/3

+

BAKHRAKH, L.E.; DENISOV, Yu.I.; KIR'YASHKIN, S.I.

Certain special features of ionic focusing of electron beams.  
Radiotekh. i elektron 7 no.7:1169-1174 '62. (MIRA 15:6)  
(Electron beams) (Electronics)

BAKHRAKH, L.E.; TURLOV, P.A.

Ion focusing of a hollow cylindrical electron beam. Radiotekh.  
i elektron. 7 no.8:1393-1399 Ag '62. (MIRA 15:8)  
(Electron beams)

ACCESSION NR: AP4009984

S/0109/64/009/001/0126/0131

AUTHOR: Bakhrakh, L. E.; Medoks, V. G.

TITLE: Thermal velocity effect in magnetically-focused electron beams

SOURCE: Radiotekhnika i elektronika, v. 9, no. 1, 1964, 126-131

TOPIC TAGS: electron tube, electron beam, electron beam tube, magnetically focused electron beam, thermal velocity effect

ABSTRACT: On the basis of the authors' simplified method (Radiotekhnika i elektronika, 1961, 6, 4, 656) and J. R. Pierce's, et al. fundamental relations (J. Appl. Phys., 1953, 24, 10, 1328), the effect is evaluated of thermal velocities in cylindrical and ribbon electron beams focused by a longitudinal magnetic field, with any degree of cathode shielding and with an allowance for the space charge. Good agreement is noted between the results of the authors' formulas and those of "more rigorous calculations" obtained by A. Szabo (IRE

Cord 1/2



ACCESSION NR: AP4009984

Trans., 1958, ED-5, 3, 183) and C. C. Cutler, et al. (Proc. IRE, 1953, 43, 3, 307). Orig. art. has: 6 figures and 7 formulas.

ASSOCIATION: none

SUBMITTED: 10Dec62

DATE ACQ: 10Feb64

ENCL: 00

SUB CODE: GE

NO REF SOV: 004

OTHER: 003

Card 2/2

BAKHRAKH, L.E.; SELIMOV, B.K.

Thermal velocities effect in a hollow cylindrical electron  
beam. Radiotekh. i elektron. 9 no.5:893-894 My '64.  
(MIRA 17:7)

BAKHRAKH, L.E.

Current limit of an electron beam with stipulation that the  
current density remains constant. Radiotekh. i elektron. 10  
no.6:1104-1109 Je '65. (MIRA 18:6)

Y. 5090-66 EWT(1)/EPA(w)-2/ENA(m)-2  
ACCESSION NR: AP5020123

IJP(c) AT  
UR/0109/65/010/008/1461/1466  
539.124, 18.043

44, 5  
AUTHOR: Bakhrakh, I. E.; Medoks, V. G.

39  
8  
TITLE: Effect of thermal velocities in a periodic electrostatic focusing of  
electron beams 21, 81, 5

SOURCE: Radiotekhnika i elektronika, v. 10, no. 8, 1965, 1461-1466

TOPIC TAGS: electron beam

ABSTRACT: The effect of transverse thermal velocities of electrons upon the geometrical parameters of cylindrical and ribbon-type electron beams formed by a periodic electrostatic focusing is theoretically evaluated. It is found that the minimum pulsation condition, neglecting the thermal effect, can be accepted as a satisfactory approximation only with  $\mu \approx 1$ , where  $\mu = U_2/U_1$ ;  $U_1$  and  $U_2$  are the potentials on the diaphragms. For values  $\mu$  essentially different from 1, the thermal-velocity effect increases and may result in considerable pulsations of the

Card 1/2

09010703

L 5090-66

ACCESSION NR: AP5020123

boundaries of a cylindrical electron beam. In the case of a ribbon beam, the effect of thermal velocities may become considerable under certain focusing conditions and with thin beams. Orig. art. has: 5 figures and 26 formulas.

ASSOCIATION: none

SUBMITTED: 14May65

ENCL: 00

SUB CODE: EC, NP

NO REF SOV: 004

OTHER: 000

Card 2/2 *ml*

L 32979-66 EWT(1)

ACC NR: AR6016260

SOURCE CODE: UR/0058/65/000/011/HO43/HO43

AUTHOR: Bakhrakh, L. E.; Dmitriyev, B. S.; Zharkov, Yu. D.

TITLE: Electronic probe for measuring the phase velocity and coupling impedance of slow wave-systems

SOURCE: Ref. zh. Fizika, Abs. 11Zh296

REF SOURCE: Sb. Vopr. elektron. sverkhvysok. chastot. Vyp. 1. Saratov, Saratovsk. un-t, 1964, 132-139

TOPIC TAGS: traveling wave interaction, phase velocity, electric impedance, electron beam interaction

ABSTRACT: The article describes an improved construction of an electronic probe for the measurement of the phase velocity and coupling impedance of slow-wave systems. The probe consists of an electron gun, a hydrogen generator, a collector, and a long glass tube. The hydrogen generator is a small nickel cylinder filled with titanium hydride, in which a heater is placed. By varying the heater power, it is possible to establish a hydrogen pressure  $\sim 10^{-2} - 10^{-4}$  mm Hg in the glass tube. The hydrogen ions then overcompensate the space charge of the beam, settle on the walls of the tube, and neutralize the electrons that fall on it. This prevents accumulation of electrostatic charge on the surface of the glass and blocking of the probe channel. In earlier probes, this was accomplished by means of a helix, which raised difficulties when slow-wave systems with large deceleration coefficient were investigated.

Cord 1/2

L 32979-66

ACC NR: AN6016260

According to the experimental results, a probe of this construction yields an error not larger than 4% in the measurement of the phase velocity and ~20% in the coupling impedance. A. Roshal'. [Translation of abstract]

SUP CODE: 09/

Cord

2/2

BK

BALEWANN, L. N., L. N. VERHOVNIK AND A. I. KATAS LEVON:

"Method of Swinging the Beam of a Linear Aerial."

"Method of Electrically Swinging a Beam Using a Dispersive Structure."

Author's Certificates

Elektrosvyaz', 1958, No. 9, p. '78



BAKHRAKH, L. L., Eng.; POLYAKOVA, P. B., Eng.; BAKHRAKH, I. R., Eng.

1. FAL'KEVICH, A. S., Eng;

2. USSR 600

4. Oxyacetylene welding and cutting.

7. Examination of the technology of gas pressure welding of large diameter pipes, Avtog. delc, Zh, No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KISLYUK, F.I., doktor tekhnicheskikh nauk; MAZEL', A.T. kandidat tekhnicheskikh nauk; PAL'KEVICH, A.S. inzhener; ANUCHKIN, M.S., kandidat tekhnicheskikh nauk; LIVSHITS, L.S: kandidat tekhnicheskikh nauk; NEYFEL'D, I.Ye., inzhener; BAKHRAKH, L.P., inzhener; POLYAKOVA, P.B., inzhener.

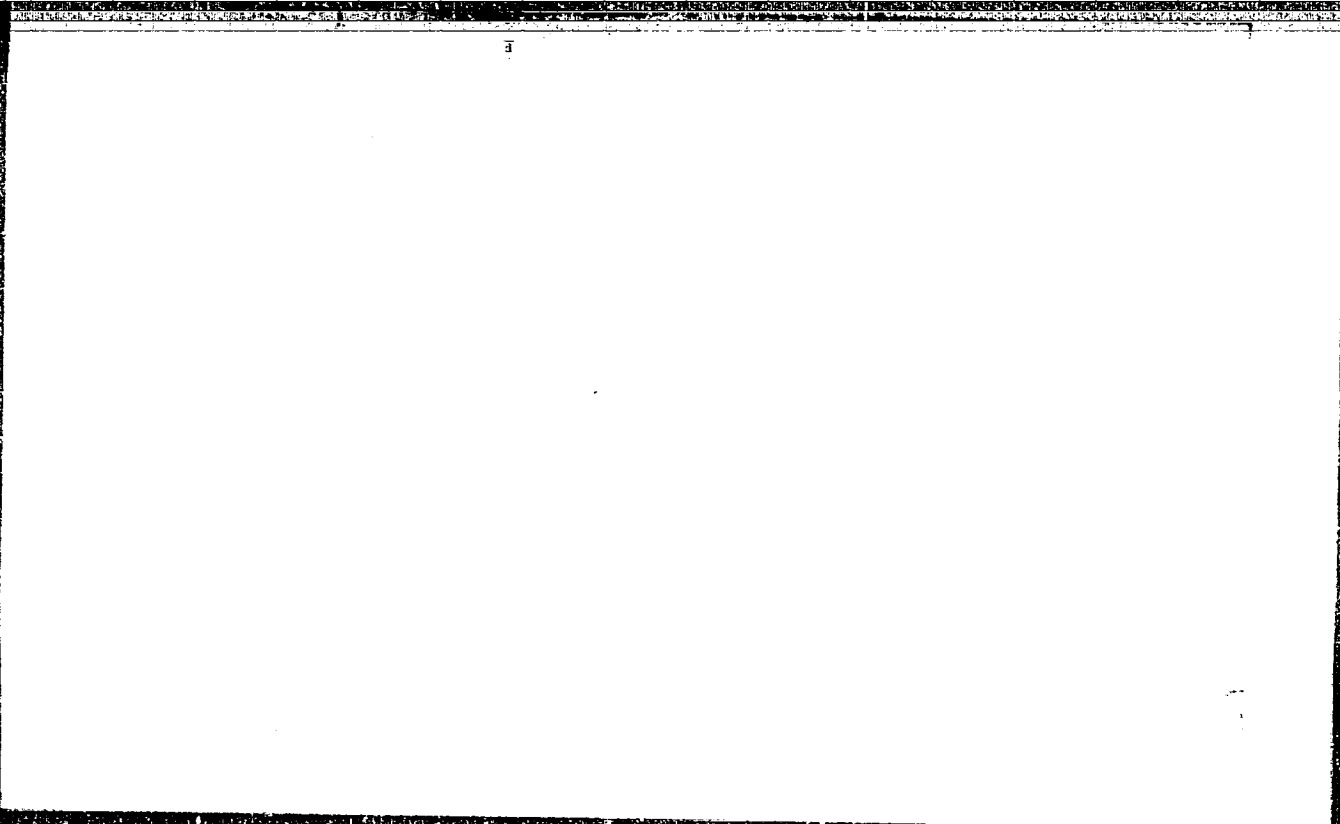
Welding with electrode cluster. Section of the All-Union Scientific Engineering Technological Association of Welders in the All-Union Scientific Research Institute for Petroleum Industry Construction. Avtog. delo 24 no.6:30 Je '53.

(MLRA 6:5)

(Electric welding)

"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2



APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000103110012-2"

5888888888

PAL'KEVICH, A.S.; POLYAKOVA, R.B.; BAKHRAKH, L.P.

Investigating the technology of gas pressure welding of large  
diameter pipes. Trudy VNI Stroiinefti no.4:46-62 '56.

(MLRA 10:1)

(Pipe, Steel--Welding)

LIVSHITS, L.S., kandidat tekhnicheskikh nauk; MAZKL', A.G., kandidat tekhnicheskikh nauk; CHUSHENKOVA, M.Ya., inzhener; BAKHRAKH, L.P., inzhener.

Welding 12Kh5MA steel pipes. Trudy VNIISTROINEFT' no.7:86-97 '56.  
(MLRA 9:11)

(Pipe, Steel--Welding)  
(Heat resistant alloys)

LIVSHITS, L.S., kandidat tekhnicheskikh nauk; BAKHRAKH, L.P., inzhener;  
LUNIN, I.I., inzhener; POLYAKOVA, R.B., inzhener.

Arc welding of high-pressure pipelines. Trudy VNIISTROINEFT' no.7:  
108-124 '56. (MLRA 9:11)

(Pipe, Steel--Welding)

*Bakhrakh, L. I.*

AID P - 5604

Subject : USSR/Engineering

Card 1/2 Pub. 107-a - 4/12

Authors : Livshits, L. S., Kand. of Tech. Sci., N. M. Savvina,  
Kand. of Tech. Sci., L. P. Bakhrakh, Eng. and I. I.  
Lunin, Eng.

Title : Endurance of welded joints of 20 and 30KhMA steels

Periodical : Svar. proizv., 12, 14-16, D 1956

Abstract : The authors present the results of tests given to two types of welded pipes: a) the 35mm thick, 229mm in diameter, 20-steel pipes automatically butt-welded by Sv-08A electrode wire of 2mm gage, the AN-348 flux, and tempered at 550-560°C [in which the weld has higher strength than the base metal] and b) the 52mm thick 30KhMA-steel pipes of the same diameter, automatically butt-welded by the Sv-Kh5M electrode of the 2mm gage, using AN-15 flux, and tempered at 650-660°C in which the joint turned out to be lower in strength than the

Bakhrakh  
SUBJECT: USSR/Welding

135-8-11/19

AUTHORS: Livshits, L.S., Candidate of Technical Sciences, and Bakhrakh,  
L.P., Engineer.

TITLE: Arc Welding of Thick-Walled High-Pressure Pipes (Dugovaya svarka  
tolstostennyykh trub vysokogo davleniya).

PERIODICAL: "Svarochnoye Proizvodstvo", 1957, #8, pp 29-31 (USSR)

ABSTRACT: The article represents recommendations by VNIISTroyneft' for  
welding pipes of steel "20" and "30XMA", with 229 mm outside  
diameter and 52 mm wall thickness. The recommendations are  
based on experimental investigations of butt joints welded under  
various technological conditions.

The illustrations show the chamfering of butts and the special  
flux-retaining arrangement used. Experimental welding was  
performed without supporting rings.

It is recommended to use multi-layer welds with section areas  
of single beads not over 70 mm<sup>2</sup>. For manual welding of steel  
"20" electrodes "YDHN-13/45", and for steel "30XMA" electrodes  
"UA-19XM" are recommended. The proper electrode diameter for  
straight butts is 3 mm, for butts on bends - 4 mm. For semi-

Card 1/2



135-8-11/19

**TITLE:** Arc Welding of Thick-Walled High-Pressure Pipes (Dugovaya svarka tolstostennykh trub vysokogo davleniya).

automatic welding of steel "20" the wire "CB-08A" and flux "AM-348" for semi-automatic welding of steel "30XMA" wire "CB-10XM" and flux "AM-15" are recommended.

Mechanical properties of welded joints equal to properties of base metal can be required, with the additional condition that impact resistance at temperature of  $-50^{\circ}\text{C}$  is to be not below  $4 \text{ kg/cm}^2$ .

The article contains 4 sketches, 2 photographs, and 4 tables.

**ASSOCIATION:** "VNIISTroyneft".

**PRESENTED BY:**

**SUBMITTED:**

**AVAILABLE:** At the Library of Congress.

Card 2/2

129-1-6/14

AUTHORS: Livshits, L.S., Candidate of Technical Sciences, and  
Bakhrakh, L.P., Panich, S.I., Engineers.

TITLE: On the Non-uniformity in the Zone of Fusion of Welded  
Joints (O neodnorodnosti v zone splavleniya svarnykh  
soyedineniy)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, No. 1,  
pp. 26 - 29 (USSR).

ABSTRACT: For studying the influence of manganese in the seam on the non-uniformity of fusion, strips of "Steel 3" (0.18% C, 0.45% Mn) were welded by means of a wire under flux. The manganese content in the seam was varied by introducing different quantities of ferro-manganese in the coating and thus a number of weld joints were obtained containing different quantities of manganese, whilst the content of other elements remained approximately unchanged. Some of the results obtained are given in Table 1, p.27. Experiments were also made with welding the chromium-manganese steel 30XMA with electrodes of such composition as to obtain an equal strength of the welds and the base material; the chemical compositions of the base metal and the welds are given in Table 2, p.28. Some of the results are entered in Table 3, p.28. On the basis of the

Card 1/3

On the non-uniformity in the Zone of Fusion of Welded Joints. 129-1-6/14

obtained results, the following conclusions are arrived at: in welds of pearlitic steels with differing chemical compositions of the metal in the weld and the base metal, the formation is possible of a structural and chemical non-uniformity in the melting zone which is characterised by the formation of decarburised and carburised zones; the formation of these non-uniformities proceeds in the solid state due to displacement of carbon atoms from one zone of the weld into the other, whereby the carbon displacement takes place only in the sections which are close to the fusion zone, namely, it proceeds from the sections containing elements which produce less stable carbides to those sections which contain elements producing more stable carbides, i.e. from the sections with lower content of carbide-forming elements into the section with higher content of such elements. The direction of displacement of the carbon does not depend on its relative concentration in the neighbouring regions and is determined by the qualitative and quantitative difference in the content of carbide-forming elements in the weld and in the base metal and, therefore, frequently the carbon moves away from zones Card2/3 with low carbon content; immediately after welding, the weld

129-1-6/14

On the non-uniformity in the Zone of Fusion of Welded Joints.

does not always have an appreciable non-uniformity in the fusion zone. The non-uniformity occurs during heating to temperatures slightly below the  $Ac_1$  point. Displacement of carbon and formation of the above mentioned type of non-uniformities take place at heating temperatures at which the iron is in the  $\alpha$  state. There are 3 tables and 3 figures, and 4 Slavic references.

ASSOCIATION: VNIISTROYNEFT'

AVAILABLE: Library of Congress.

Card 3/3